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REDUCTION OF GHG EMISSIONS FROM SHIPS

Fourth IMO GHG Study: comments on the final report

Submitted by SGMF

SUMMARY

Executive summary:	SGMF welcomes the completion and release of the Fourth IMO GHG Study, and believes it makes a strong contribution toward our collective efforts to decarbonize shipping. It is a very comprehensive document, and in some of its details SGMF believes there are specific technical points that require some further careful evaluation.
Strategic direction, if applicable:	3
Output:	3.2
Action to be taken:	Paragraph 16
Related documents:	Resolution MEPC.304(72); MEPC 75/7/15; ISWG-GHG 7/3/1 and ISWG-GHG 7/5

Introduction

1 This document provides comments on document MEPC 75/7/15 (Secretariat) and is submitted in accordance with the provisions of paragraph 10 of Circular Letter No.3985/Rev.1 on resumption of the seventy-fifth session of the Marine Environment Protection Committee (16 to 20 November 2020).

2 The Committee, at its seventy-second session, adopted resolution MEPC.304(72) on *Initial IMO Strategy on reduction of GHG emissions from ships* (the Initial Strategy).

3 A draft final report of the Fourth IMO GHG Study was published on 29 July 2020. The Study was carried out by a consortium of consultants, led by CE Delft.

4 The report concludes that it will be difficult to achieve IMO's level of ambition for 2050 with energy-saving technologies and other operational measures alone. It also makes the case that a significant marine energy transition is necessary to reach the goals of the Initial Strategy

and SGMF is fully in agreement with this conclusion, but waiting for the availability of zero carbon fuels whilst not rapidly accelerating the uptake of transitional fuels will significantly inhibit efforts to meet the target.

Methane slip

5 Within the report there are some conclusions drawn regarding methane slip, related to LNG consumption, which warrant closer consideration.

6 During the period 2012 to 2018, LNG carriers were by far the majority users of LNG as a marine fuel and the 26% increase in LNG fuel consumption is linked with the increase in the LNG carrier fleet. LNG carriers are mainly using Boil Off Gas (BOG), which is LNG evaporating in their cargo tanks, as fuel. In 2008 the main technology option was steam turbines, and in the period from 2012 to 2018 dual-fuel engines became the preferred choice. These are significantly more energy efficient and in combination with improved containment system reducing BOG, the carbon intensity of modern LNG carriers is significantly lower. According to the Fourth IMO GHG Study, the estimated energy efficiency of LNG carriers in the size segment 100,000 to 199,000 cbm is predicted to have improved since 2012 by less than 4% on an EEOI basis and 13% on an AER basis. Compared to 2008, liquefied gas carriers are actually shown to have decreased in energy efficiency. These estimates in view of the change in the global fleet cannot be explained and are not supported by operational experience and warrant further investigation considering fuel consumption and transport work elements.

7 Looking at the fleet data for that period it should be noted that methane emissions have increased from 55,000 tonnes/year in 2012 to 140,000 tonnes/year in 2018 (+151%). The uptake of dual-fuel engines will result in an higher increase of methane emissions compared to growth in the use of LNG as previous use was dominated by inefficient steam turbines with low methane slip. However, as methane slip is determined by emission factor from fuel consumption, further analysis of the methane slip predictions is required.

8 The Fourth IMO GHG Study is applying methane factors as a function of engine type, which is a welcome improvement. Methane slip is a major concern and signficant improvements have been made to minimize methane slip and overall GHG emissions. Consideration should be given to how these improvements can be reflected for ships using LNG as a fuel going forward.

Black Carbon

9 SGMF notes the findings of the study with respect to Black Carbon (BC), specifically that while direct CO_2 emissions from fuel account for 98% of total GHG emissions, when BC is included this drops to 91% of GHG emissions, which is a significant factor when it comes to comparing the GHG performance of marine fuels. The study mentioned the complexity of providing accurate estimates of BC. SGMF recognizes the importance of BC and supports further work to address uncertainties and to develop a framework on how BC can be incorporated in a holistic assessment of fuel/technology options.

LNG as marine fuel

10 SGMF regards LNG as a significant contributor to the marine fuels transition towards carbon-neutral and zero-carbon fuels, examples of which might include net carbon neutral fuels such as bio methane or synthetic methane. Existing infrastructure and safe handling protocols now instigated lead naturally to the inclusion of these carbon neutral fuels as these do not require any modification to the fuel supply chain. Many of the net zero or zero-carbon fuels necessary to complete this energy transition are gases and fall into the remit of SGMF.

11 In document ISWG-GHG 7/5, SGMF provided results of an independently peer reviewed, well-to-wake analysis regarding the use of LNG as marine fuel, conducted by Thinkstep (now: Sphera). This ISO 14040 compliant report fully details the performed lifecycle analysis (LCA) approach and includes both greenhouse gas emissions (GHG) and local air pollutants. The study was carried out using the latest qualified information from the industry supply chain to provide the most comprehensive and complete reference as to the use of LNG as a marine fuel.

12 SGMF has commissioned an update of that study which will be published in spring 2021, and the scope has been expanded to include the LCA of a number of alternative low-carbon and zero-carbon fuels.

Conclusions

13 Realizing the goals of the Initial Strategy will require the significant uptake of cleaner sustainable fuels towards the ultimate goal of carbon-neutral and zero-carbon shipping. This will require significant technology and infrastructure development. Further analysis of fuel consumption and energy efficiency are envisaged once the underlying datasets supporting the findings contained in the Study are published separately on the IMO website.

14 Evaluation of alternatives should be carried out on the basis of total GHG-emissions, and not be judged on the basis of a single GHG like CO_2 or methane. GHG reduction strategies can be best evaluated by including CH_4 and N_2O on a CO_2-equivalence basis, and also consider the impact of short-lived climate forcing actors, specifically Black Carbon.

15 SGMF looks forward to contibuting to more detailed consideration of these issues at the appropriate time.

Action requested of the Committee

16 The Committee is invited to consider the information and comments contained in this document and to take action as appropriate.